



Laser, Thermal and Ballistic Test Facility

Overview:

The **Natick Soldier Center** has the capabilities to evaluate laser eye-protection systems at numerous wavelengths, output powers and pulse widths. Other unique capabilities include ballistic, haze and weatherometer testing of laser and ballistic eye protection systems, as well as a complete thermal data acquisition and analysis system.

Description:

The Natick Soldier Center can evaluate the physical and optical properties of developmental materials and verify end-item compliance with American National Standards Institute (ANSI) or military performance specifications.

Laser Systems include ruby, neodymium, dye, and alexandrite, and can produce all wavelengths necessary to test the performance of eyewear.

A picosecond laser can be used for probing the optical properties of developmental materials by utilizing such techniques as degenerate four-wave mixing, z-scan and time resolved measurements. A nanosecond laser is used for optical limiting measurements. A 2.5 kW CO₂ laser is also available for thermal studies.



Thermal Transfer Measurements through laboratory materials and clothing systems are made with our CO₂ laser and instrumented manikin. The data are used as input to a computer code which calculates skin burn severity.

Ballistic Evaluation of eye armor is obtained via a ballistic gun that projects fragments at speeds consistent with ANSI Z-87.1 and MIL-STD-662 specifications. Eye armor can be exposed to various weather scenarios in a weatherometer and then tested at extreme temperatures ranging from -73° to 200° C in a computer controlled environmental chamber.

Spectrophotometer Evaluation of materials is accomplished with a Lambda 9 UV/VIS /NIR spectrophotometer. Optical densities up to 5.0 can be obtained as well as corresponding photopic, scotopic and P-43 phosphor transmissions.

Point Of Contact:

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